

Appl. No. 10/067,910

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AUG 09 2006

With respect to claim 1, the Examiner alleges that Figure 1 in the Ho reference teaches a cross-talk monitoring scheme which includes multiplexing of an optical signal comprising wavelength channels $\lambda_1, \dots, \lambda_i, \dots, \lambda_N$ wherein each channel is impressed with a dither frequency f_i .

However, Ho discloses that the power of each channel and the power of the dither tones are detected after the multiplexed signal is demultiplexed by the grating based demultiplexer. This is disclosed on page 1127, second column "We propose to use an array of detectors to detect several adjacent channels, weight them, and combine them with the desired channel" and the illustration in Figure 1 that shows the grating based demultiplexer demultiplexing the multiplexed optical signal on the "Optical Link of Network" and directing different wavelengths to respective detectors, which are also coupled to a tone power monitor. Therefore, Ho clearly discloses demultiplexing a multiplexed optical signal before steps such as determining channel power and determining dither power would be performed. Even if such determining steps are performed in Ho, Applicant does not concede they are performed in the same manner as the steps recited in claim 1.

Claim 1 recites "A method of monitoring cross-talk, at a point in an optical system, arising at least in part from a non-linear process in a transmission medium utilized in the optical system, in a multiplexed optical signal having a plurality of channels". In the claims of the present application there is no indication that the multiplexed optical signal is demultiplexed prior to the steps of "determining channel power of at least one channel of the plurality of channels; determining a fractional power of any dither present upon the at least one channel resulting at least in part from the non-linear process in the transmission medium; and determining a power transfer coefficient". An example of how the power and the dither of at least one channel of the multiplexed optical signal can be monitored is described on page 7, line 21 to page 8, line 3 of the present application, where the application states an OSA (optical spectrum analyzer) is used "to measure an indication of channel power of at least one channel of the plurality of channel". Ho discloses monitoring non-linear cross-talk arising from demultiplexing of a signal after it has been demultiplexed by the grating based demultiplexer. Seynejad does not specifically disclose if channel powers and dithers are determined from the channels of a multiplexed optical signal or demultiplexed signals of a formerly multiplexed signal, but discloses mathematical

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tools to aid in “compensating for the performance of degradation arising from SRS on pilot-tone optical monitoring” (abstract of Seynejad).

Thus, the recited features of claim 1 are not all disclosed by the cited references, and it is submitted that the Examiner has failed to satisfy a first necessary criterion for establishing a *prima facie* case of obviousness.

With regard to the second requirement for establishing a *prima facie* case of obviousness, Applicant submits that there would be little chance of success in arriving at the claimed invention in combining Ho and Seynejad because Ho demultiplexes the optical signal and Seynejad does not specifically disclose if channel powers and dithers are determined from the channels of a multiplexed optical signal or demultiplexed signals of a formerly multiplexed signal. Without disclosing all the features of claim 1, it is not reasonable to expect the combination of references would be successful in arriving at the claimed invention, especially in view of the fact that the examiner has not provided an explanation of how the missing feature would be obvious. As a result, Applicant submits that the Examiner has failed to satisfy a second necessary criterion for establishing a *prima facie* case of obviousness.

According to The Manual of Patent Examining Procedure, Section 2143.01 “there are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art”. It is respectfully submitted that the Examiner has not established a motivation to combine the references from any of the three sources.

With regard to the first source for a motivation to combine, Applicant submits that the nature of the problem to be solved by the reference is not the same. Ho teaches a method “for the monitoring and reduction of crosstalk arising from the limited stop-band rejection of optical bandpass filters in dense WDM systems” (abstract). Seynejad discloses a “tool for compensating for the performance degradation arising from SRS on pilot-tone optical monitoring” (abstract). Applicant submits that these are two different problems with different solutions. Ho deals with monitoring linear cross-talk related to a discrete optical component involved in demultiplexing an optical signal and Seynejad deals with compensating degradation arising from non-linear cross-talk in the transmission medium.

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With regard to the second source for a motivation to combine, Applicant submits that neither of the two pieces of cited art suggests the subject matter of the other piece of prior art in a manner that would lead one skilled in the art to arrive at the claimed invention by a review of the two references. In addition, neither reference refers to each other. As was clearly stated *In re Kotzab*, 55 USPQ2d 1313, 1318 "Identification of prior art statements that, in abstract, appear to suggest claimed limitation does not establish prima facie obviousness without a finding as to specific understanding or principle within knowledge of skilled artisan that would have motivated one with no knowledge of invention at issue to make combination in manner claimed" (emphasis added). Applicant respectfully submits that monitoring linear cross-talk in a demultiplexed signal that results from the demultiplexer is not the same as monitoring non-linear cross-talk while the optical signal is still a multiplexed signal having multiple channels the non-linear cross-talk resulting from the transmission medium. The Examiner has not provided clear motivation for why it would be obvious for someone desiring to monitor non-linear cross-talk in an optical signal that is still multiplexed to utilize a scheme for monitoring linear cross-talk in demultiplexed signals, where the linear cross-talk is caused by a grating demultiplexer that demultiplexes the signal, to do this. Applicant submits that the Examiner's selection of references is a prime example of "identification of prior art statements that, in abstract, appear to suggest claimed limitation" but clearly do not result in the invention in the manner claimed.

With regard to the third source for a motivation to combine, Applicant submits that the Examiner has failed to show motivation based on the knowledge of persons of ordinary skill in the art. The Examiner's statement that "one of ordinary skill in the art would have been motivated to combine the teachings of Seydnejad with the cross-talk monitoring scheme of Ho ... because measuring cross-talk caused by SRS helps engineering transmission systems" does not provide a suitable motivation based on the knowledge of persons of ordinary skill in the art to achieve the claimed invention. Applicant submits that the Examiner has not shown that one skilled in the art would have the knowledge of monitoring non-linear cross-talk in a multiplexed optical signal based on having the knowledge of monitoring linear cross-talk in a demultiplexed optical signal resulting from the demultiplexer performing the demultiplexing. Applicant submits that the Examiner has failed to satisfy the third source for a motivation to combine the references.

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Furthermore, Applicant submits that using Ho to monitor non-linear cross-talk in a multiplexed optical signal would change the principle of the operation of system described in Ho. A fundamental aspect of what Ho is disclosing is the monitoring of linear cross-talk in a demultiplexed signal that results from the demultiplexer performing the demultiplexing. If the optical signal remains multiplexed when the steps of "determining channel power of at least one channel of the plurality of channels; determining a fractional power of any dither present upon the at least one channel resulting at least in part from the non-linear process in the transmission medium; and determining a power transfer coefficient" as recited in claim 1, there would be no linear cross-talk from the demultiplexer, because no demultiplexer is used. Applicant submits that this is another reason why there would be no motivation to combine the Ho and Seynejad.

As the Examiner has failed to satisfy the necessary criteria for establishing a prima facie case of obviousness with respect to claim 1, for at least the reasons discussed above, Applicant submits that claim 1 patentably distinguishes over the combination of Ho and Seynejad. The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claim 1.

Claims 2 and 3 depend on claim 1 and as such are allowable as claim 1 patentably distinguishes over the cited references for at least the reasons discussed above.

Claim 15 is an apparatus claim directed to similar subject matter of claim 1. Claim 15 in particular recites "an OSA (Optical Spectrum Analyzer) adapted to measure an indicator of channel power of at least one channel of the plurality of channels". Clearly, the claim is directed to monitoring cross-talk in a multiplexed optical signal, not demultiplexed signals that were formerly a multiplexed optical signal as disclosed in Ho. For this reason and at least the other reasons described above with regard to claim 1, Applicant submits that amended claim 15 patentably distinguishes over the cited references.

Claim 39 depends on claim 1 and claims 40, 42 and 44 depend on claim 15. These claims should be allowed for at least the same reasons as discussed above with reference to claims 1 and 15.

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The Examiner has rejected claims 41 and 43 under 35 U.S.C. 103(a) as being unpatentable over Ho in view of Seynejad, and further in view of United States Patent No. 5,892,606 (Fatehi *et al.*). Applicant notes that the Fatehi reference was not included in Applicant's IDS and does not appear on either "Notice of References Cited" form issued by the Examiner. Applicant respectfully requests the Examiner ensure that this reference is properly recorded in the file wrapper.

Claim 41 depends on claim 1 and claim 43 depends on claim 15. Claims 41 and 43 should be allowed for the same reasons as discussed above with reference to claims 1 and 15. In particular, Ho and Seynejad fail to disclose all of the claimed features of claims 1 and 15, respectively, and Applicant submits that the Fatehi reference also fails to disclose the features of claims 1 and 15 that Ho and Seynejad fail to disclose, namely monitoring non-linear cross-talk of a multiplexed optical signal.

In view of the foregoing, early favorable consideration of this application is earnestly solicited.

Respectfully submitted,

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Date: August 9, 2006

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